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UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
ANIMAL DISEASE ERADICATION DIVISION
FEDERAL CENTER BUILDING
HYATTSVILLE, MARYLAND 20781

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REPORT OF COOPERATIVE TICK
ERADICATION ACTIVITIES
Fiscal Year 1964

NOVEMBER 9, 1964

THE ERADICATION PROGRAM

Cattle fever ticks Boophilus annulatus and Boophilus microplus spread bovine piroplasmosis--a severe and often fatal disease of cattle. It is also known as cattle tick fever, southern cattle fever, splenic fever, and Texas fever.

Tick larvae hatch from eggs laid on the ground, become attached to animals occupying infested premises, feed upon the host animal--and thus transmit the disease--molt, mate, and the engorged female drops to the ground to deposit her eggs and thus the ticks are perpetuated.

An all-out eradication program was instituted in 1906. Thirty-seven years later, in 1943, the tick had been eradicated from the United States, except for a narrow buffer zone under Federal and State quarantines along the Texas-Mexico border. There, reinfestations occur from time to time and an active program is required to prevent additional spread into adjacent areas. Reinfestations have also occurred in California and in Florida from time to time.

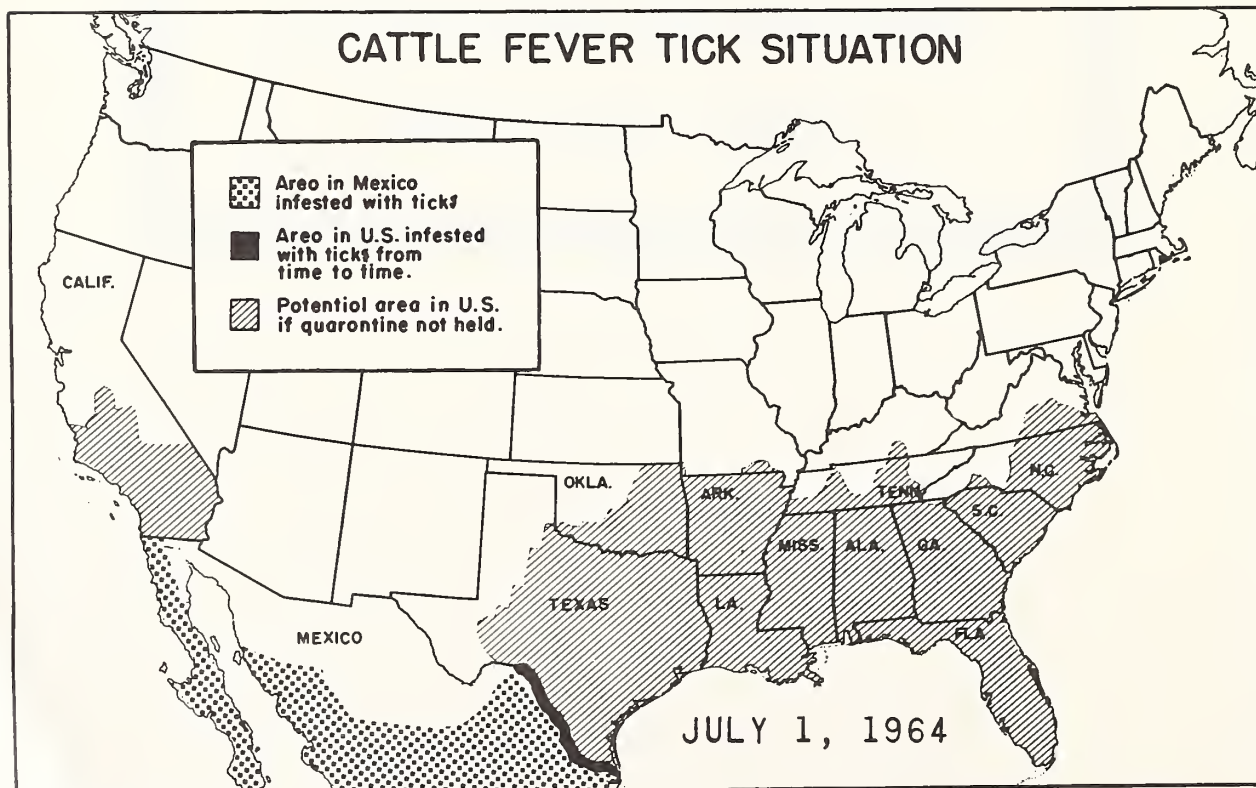
The eradication program includes inspection, quarantine, and dipping of infested animals.

PROGRAM GOALS

Prevention--keeping the ticks out of the United States--is a major part of the effort against cattle fever ticks. A quarantine zone is maintained along the international boundary and the lower Rio Grande River in eight Texas counties as adjacent areas in Mexico are infested. Cattle from Mexico are carefully inspected for ticks at the border. They must be free of ticks and must be given a precautionary dipping before they can be imported.

Without these controls, cattle fever ticks would reinfest areas of the United States that have warm climates. In spite of continued efforts to keep out these parasites, they have reappeared from time to time, but vigilance and prompt eradication measures have eliminated the outbreaks.

Should the ticks gain a foothold, piroplasma-carrier cattle imported from Mexico could furnish reservoirs leading to heavy losses in our cattle population.



ACTIVE PROGRAM CONTINUES IN TEXAS

3

All territory in Mexico adjacent to the international boundary along the lower Rio Grande River is tick infested, and reinfestations in Texas by ticks carried by Mexican animals illegally entering the United States occur regularly. The river, serving as the boundary, is not an effective barrier against such illegal movements. A buffer area, under Federal and State quarantine, extends from Del Rio to the Gulf of Mexico, approximately 500 miles. This zone is constantly patrolled by Department inspectors who, in cooperation with Texas livestock sanitary authorities, work diligently to reduce the introduction and prevent the dissemination of the ticks. The area under quarantine includes parts of Cameron, Hidalgo, Kinney, Maverick, Starr, Val Verde, Webb and Zapata Counties.

REPORT OF ACTIVITIES IN BUFFER AREAS

FISCAL YEARS 1959 THROUGH 1964 AND IN 1952

<u>Illegally Entering Mexican Livestock Caught</u>	<u>1964</u>	<u>1963</u>	<u>1962</u>	<u>1961</u>	<u>1960</u>	<u>1959</u>	<u>1952</u>
Equine - tick-infested	133 - 1	122 - 4	120 - 9	61 - 2	41 - 3	15 - 0	1,873 - 183
Cattle - tick-infested	239 - 42	139 - 41	59 - 26	17 - 8	50 - 21	15 - 5	147 - 82
Sheep and Goats - tick-infested	6 - 0	1 - 0	5 - 0	1 - 0	1 - 0	0 - 0	0 - 0
<u>American Livestock Straying to Mexico and Returning</u>	18 - 1	51 - 0	17 - 0	8 - 0	31 - 0	8 - 0	7 - 0
<u>Inspected for Ticks</u>							
<u>Systematic Area</u>							
Herds	47,214	49,080	42,298	35,269	35,380	30,955	32,363
Livestock	1,388,816	1,381,195	926,872	739,959	741,286	690,307	558,809
<u>Final Area</u>							
Herds	16,562	16,695	14,879	15,653	12,771	13,067	12,011
Livestock	349,027	344,814	297,304	293,830	304,590	292,309	168,088
<u>Dipped for Ticks</u>							
<u>Systematic Area</u>							
Herds	11,731	11,847	10,424	10,382	9,556	9,918	13,845
Livestock	80,895	88,518	56,655	58,201	52,743	51,706	81,685
<u>Final Area</u>							
Herds	478	606	641	529	382	340	113
Livestock	1,784	2,815	2,184	4,950	1,047	1,209	1,323
<u>Intrastate Certificates Issued</u>							
Number of Certificates	14,685	14,556	14,023	13,046	12,435	12,206	14,913
Number of Livestock	99,294	188,732	123,257	83,952	76,659	28,268	57,704
<u>Interstate Certificates Issued</u>							
Number of Certificates	56	67	65	66	172	312	13
Number of Livestock	6,667	8,134	7,205	12,668	21,390	14,511	808
<u>Herds Held for Further Treatment</u>							
Systematic Area	20	48	14	5	17	3	92
Final Area	0	0	0	4	4	0	0
<u>Tick-Infested Herds Found</u>							
Systematic Area	4	38	21	1	4	2	29
Final Area	0	1	0	0	0	0	1
<u>Exposures to Clean Premises</u>	26	68	16	25	17	4	108
Re-exposures to Held Premises	3	3	5	1	4	0	73

PROGRESS IN PUERTO RICO AND THE U. S. VIRGIN ISLANDS

In Puerto Rico an active tick eradication program began in 1936. Here, the tropical variety of the fever tick, B. microplus, was prevalent and it was necessary to treat sheep and goats as well as equines and cattle, and to slaughter deer.

No cattle fever ticks have been found since December 1952. Systematic dippings were discontinued in May 1953 and systematic inspections discontinued in June 1954.

The Islands of St. Croix, St. Thomas, and St. John U. S. Virgin Islands remain tick infested.

EQUINE PIROPLASMOSIS SITUATION REPORT - OCTOBER 1964

Equine piroplasmosis (EP) was first diagnosed in the United States in Florida in August 1961. As of October 15, 1964, the disease has been diagnosed in 145 horses on 92 premises in Florida. In 1962 four cases were laboratory confirmed in a Georgia herd. This was the first known incidence of the disease in the United States outside of Florida. It is believed to have been limited to one premises in Coffee County. The infected horses in Georgia were slaughtered and balance of herd was tested by passing blood into susceptible recipient horses with no evidence of infection. One case of EP was diagnosed (by demonstration of piroplasma bodies in red blood cells) at a military base in Puerto Rico in July 1964.

World literature reports that equine piroplasmosis is caused by Babesia caballi or Nuttallia equi and can be fatal to 5 - 50 percent of the animals infected. To this date only Babesia caballi has been identified in the United States as a causative agent of equine piroplasmosis and it has been fatal to approximately 20 percent of the animals known to be infected.

World-wide, at least fifteen species of ticks have been incriminated or proven to be vectors of the disease. Of these, at least two are definitely present in the United States: Rhipicephalus sanguineus, the brown dog tick, and Dermacentor nitens, the tropical horse tick.

The tropical horse tick (Dermacentor nitens) is a one-host tick. It was first reported in Jamaica and Santo Domingo in 1897; later in Argentina, Columbia, Central America, Mexico, Cuba, Haiti, and Trinidad. Heavy infestations were found in the ears of horses in a limited area in Texas as early as 1907. This tick is quite common in Puerto Rico and the U. S. Virgin Islands and is found on both cattle and horses. Collections have also been made from sheep, goats, mules, and deer.

Unconfirmed evidence indicates the presence of the tropical horse tick in Florida in 1947. However, it was not positively identified there until 1958. Research workers at Beltsville provided conclusive evidence that the tropical horse tick is capable of transmitting EP and that the disease can be transmitted in a "hereditary" manner by ticks which are the progeny of ticks that have fed on an infected horse. It is not known how many generations of ticks can successively transmit piroplasmosis in this "hereditary" way.

Detection of equine piroplasmosis is difficult. Reliance is placed on finding the protozoa in the red blood cells. The parasites are most common in the peripheral circulation from the second to the fifth day following appearance of clinical signs; thereafter they gradually disappear. After death, the organisms may be found more readily in smears made from spleen, liver, and kidneys. Research is currently underway to develop a serological test. This work is showing promise.

Recommended controls for the disease include vector control, precautions against mechanical transmission, prompt reporting, and control of infected animals.

Research work and field trials are being conducted in Florida. In this work, the effectiveness of several tickicides is being evaluated.

TICK SURVEY OF SHEEP AND GOATS CONDUCTED ON ST. CROIX, U.S. VIRGIN ISLANDS

Dr. R. L. Park, Animal Husbandman, Virgin Islands Agricultural Program, and Mr. Agustin Quintero (livestock inspector of the Animal Disease Eradication Division force in Puerto Rico) surveyed twelve lots of sheep and goats on the island of St. Croix to determine whether these species were infested with Boophilus microplus or Dermacentor nitens. Their survey of the twelve premises disclosed B. microplus infestations on two lots of goats and six lots of sheep. Dermacentor nitens ticks were also collected from two of the lots of sheep. Neither B. microplus nor D. nitens ticks were found on the sheep or goats examined in six lots. The one deer examined was infested with B. microplus ticks.

WILD LIFE TICK SURVEY TURNS UP INTERESTING COLLECTION

Taxonomists at the Beltsville ADE Ectoparasite Laboratory recently identified Ixodes affinis (Neumann 1899) ticks in a routinely submitted collection from South Carolina. The specimens were collected from three white-tailed deer in Dorchester County. This species of tick, although reported frequently in Central and South America, has rarely been reported in the United States.

There are published reports of its occurrence on lynxes in Florida in 1948 and 1951, on a dog in Florida in 1951, and on deer inhabiting an island off the coast of Georgia in 1960. Other recorded hosts in southern Mexico and Central and South America have been coatí, ocelot and puma.

Certain stages of this species are extremely difficult to differentiate from the species of Ixodes commonly found in the United States, Ixodes scapularis and Ixodes pacificus, especially with regard to unengorged females.

Little is known of the role these ticks might play as vectors in the transmission of livestock diseases. However, finding them points to the significance of the nationwide tick survey and the potential it provides as an excellent screening method for early detection of Boophilus and other exotic ticks, should they gain entrance into the United States.

Field Manual on Veterinary Entomology (Section on Ticks) Revised

Considerable work was done in revising the section on ticks, first distributed in August 1961, of the Field Manual on Veterinary Entomology. Drawings have been improved considerably and written material amplified. The revision is in print and should be out soon.

PARASITE IDENTIFICATION AND/OR CONFIRMATION AT BELTSVILLE ECTOPARASITE LABORATORY

Emphasis on the importance of collecting ticks from all livestock species for identification continued during FY 1964. A total of 2,592 lots of ticks were received and identified at the ADE Ectoparasite Laboratory, Beltsville, Maryland. During the same period, 216 mite specimens and 84 miscellaneous ectoparasite specimens were identified. Approximately 13,019 lots of suspected screwworm larvae were received and identified. Of these, some 5,226 lots were identified as screwworms; the remainder being classed as other various species of blow fly larvae.

EXOTIC TICKS FOUND IN OKLAHOMA, NEW YORK, WASHINGTON

The Bont Tick Reappears

In December 1963 one male Amblyomma hebraeum, (the bont tick), was found on a white rhinoceros at the Lincoln Park Zoo, Oklahoma City, Oklahoma. The animal had been caught in Zululand, South Africa, in April 1963 and had arrived in the United States in August 1963.

Previously, in August 1962, two male A. hebraeum ticks had been found in the ear of a white rhinoceros at the Catskill Game Farm, New York. This animal had also originated in Zululand.

A. hebraeum, a three-host tick, is capable of parasitizing a variety of domestic as well as wild animals, small mammals, fowl, and man. All stages of the tick may live unfed for long periods--in the case of the adult, up to 450 days. In addition, the male may remain attached on a host for periods up to 8 months. This exotic species has considerable economic significance since it is a vector of the rickettsial causative agent of heartwater in cattle, sheep, and goats.

Amblyomma Incisum Ticks Found

Male ticks identified as A. incisum (Neumann) were collected in April 1964 from a South American tapir acquired by a New York City zoo the previous month. Only five specimens of this species have been reported (described by two investigators, Neumann and Aragao) since 1906. These were found on Canis spp., and Cervus spp., antelope, and the South American tapir, in Ecuador, Bolivia, and Brazil. The biology of the tick has not been determined. As far as is known, it is not a vector of any animal disease.

Ticks Found on Recently Imported Iguanas

Ticks were observed at a Walla Walla, Washington, pet show on South American iguana lizards and in the litter accompanying the shipment of April 7, 1964, to Washington from Florida. Unfortunately, no specimens were obtained. However, the iguanas and litter were destroyed.

Generally speaking, ticks found on cold-blooded animals such as snakes or lizards are not a threat to livestock. The reptilian ticks are rather host specific and we know of no research which incriminates them as vectors of livestock diseases. Nevertheless, several vectors of exotic livestock diseases, such as Amblyomma variegatum and A. hebraeum, have been reported from reptiles.

The iguana tick, A. dissimile, is not known to transmit diseases to livestock and is only rarely reported from mammals. However, unless a positive identification is made, there is always the remote possibility that a reptile could be infested, not with an apparently harmless iguana tick, but with an exotic tick such as A. hebraeum commonly found on livestock.

Lone Star Tick Collected at Port

A male Amblyomma americanum (lone star tick) was collected from a wooden container in foreign commerce removed at the Baltimore port.

EXOTIC TICKS COLLECTED AT WILD ANIMAL COMPOUNDS AND ZOOLOGICAL PARKS DURING RECENT YEARS

AMBLYOMMA GEMMA; A. HEBRAEUM; A. SUBLAEVE; A. LONGIROSTRE; A. ROTUNDATUM; AMBLYOMMA or HYALOMMA spp.; APONOMMA LATUM or APONOMMA spp.; IXODES HEXAGONUS; DERMACENTOR RETICULATUS; RHIPICEPHALUS EVERTSI EVERTSI; R. EVERTSI MIMETICUS or R. PULCHELLUS ticks were collected from ELAND, NILGAI, ORYX, ZEBRA, ZEHORSE, CAMEL, ABYSSINIAN ASS, HARTEBEEST, GIRAFFE, RHINOCEROS, PANGOLIN, PORCUPINE, or SEVERAL SPECIES OF REPTILES in the States of TEXAS, ILLINOIS, MICHIGAN, CALIFORNIA, PENNSYLVANIA, WASHINGTON, NEW YORK, or FLORIDA.